Wisconsin Knowledge and Concepts Examinations
Criterion-Referenced Test

WI

Guide to

Grade 7

Released Item Books
In READING and MATHEMATICS

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Guide to Grade 7 Released Item Books in Reading and Mathematics

This document contains information for using, scoring, and interpreting the released items in reading and mathematics.

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Guide to Released Item Books

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Introduction

What are released items?

The items in the Reading and Mathematics released item books are actual items from the fall 2005 state assessment, the Wisconsin Knowledge and Concepts Examinations— Criterion-Referenced Test (WKCE-CRT). These items will not be used again on the state assessment and may, therefore, be used in Wisconsin for professional development, improving instruction, and student practice. The items in the released item books illustrate the formats and kinds of items that students will encounter on the WKCE-CRT.

How do I use the released item books and this guide?

Professional Development

Released items are useful as educators engage in conversations about what students are expected to know and be able to do to demonstrate proficiency on the state assessments relative to the state model academic standards. Released items can inform discussions about state and local standards, curriculum, instruction, and assessment.

This guide provides instructions for administering the released item books as practice tests and information for scoring the items, including scoring guides and anchor papers for the constructed-response items. The item information tables identify the answer key, what each item measures, depth of knowledge, and item difficulty. Item difficulty is presented as both the percentage of students who answered the item correctly and the scale score location of the item. The item's scale score location describes where the item functions along the ability scale. Items with higher scale score locations are considered more difficult than items with lower scale score locations. Students with scale scores above the scale score location of the item would have a greater probability of answering the item correctly than students with scale scores below the item's scale score location.

Improving Instruction

Teachers may use released items in classroom activities that help students understand how to:
  • solve problems
  • determine which answer choices are correct, which are incorrect, and why
  • respond to constructed response items with complete, thoughtful answers
  • approach long and/or multi-step tasks
  • use good test-taking strategies.

Student Practice

Students may perform better and with less anxiety if they are familiar with the format of the test and with the types of items they will be required to answer. Note that a student's score on the practice test cannot be converted to a total scale score, used to predict performance on the operational WKCE-CRT, or used to make inferences about the student's learning.

Reading

Sample Directions for Administering the Reading Test

Make sure each student has his or her own test book, a No. 2 pencil, an extra eraser, and scratch paper. Students' test books should be closed.

SAY **In this test, you will read some passages and answer both multiple-choice questions and short-answer questions about those passages. Multiple-choice questions are questions that ask you to choose the best answer. Remember, for the multiple-choice questions, you must fill in the circle completely and make your mark heavy and dark. If you want to change an answer, completely erase the mark you made before making a new mark. You must fill in only one circle for each multiple-choice question.**

Short-answer questions are questions that ask you to write your answer instead of filling in a circle. Write your answer on the lines in your test book. You may also write in the space under the lines, but your answer must stay inside the boxed area. Answers or parts of answers written outside the boxed area will not be scored. You may use scratch paper to help you plan your answer, but remember to write your answer in the boxed area in your test book. After you have written your answer, be sure to read it to make sure you have written your ideas clearly and completely.

For both the multiple-choice questions and the short-answer questions, remember to look back at the reading passages to help you answer the questions. For some questions, you may need to go back to two reading passages to find the answer. Be sure to look back at both reading passages to help you answer these questions.

You will have 40 minutes to do the test. Work until you come to the word "STOP" at the bottom of the page. You may go back and check your answers. When you have finished, sit quietly until everyone else has finished.

Are there any questions?

When you are sure that all students understand the directions, continue.

SAY **Please open your test book to Page 2.**

Demonstrate. Check to be sure that all students are in the correct place in their test books.

SAY **You may begin.**

Record the starting and stopping times.

Record the Starting Time:	Add 40 Minutes:	Record the Stopping Time:
_____	**+ 40** _____	_____

Check to be sure that students are marking their answers in the appropriate places in their test books.

At the stopping time,

Stop. This is the end of the test. Please close your test book.

Collect all test materials. Use the information on the following pages to score the multiple-choice and constructed-response items.

Reading Item Information

Item	Answer Key	Objective/ Subskill	Depth of Knowledge Level	2005–06 Item Statistics SR: Percent of Students who Chose A, B, C, or D (*Indicates Correct Response). BCR: Percent of Students who Received 0, 1, 2, or 3 Points					Scale Score Location
				Format	A or 0	B or 1	C or 2	D or 3	
1	A	2.1	1	SR	*92%	2%	2%	4%	508
2	A	2.1	1	SR	*66%	23%	7%	4%	432
3	D	2.1	1	SR	8%	2%	1%	*88%	527
4	B	4.3	4	SR	8%	*69%	12%	11%	499
5	D	1.1	1	SR	22%	10%	13%	*55%	543
6	A	4.1	3	SR	*91%	4%	3%	2%	673
7	A	1.2	3	SR	*63%	22%	3%	11%	533
8	A	1.1	3	SR	*91%	2%	2%	4%	530
9	A	3.3	3	SR	*44%	22%	16%	18%	434
10	A	3.1	3	SR	*87%	3%	6%	3%	453
11	D	3.1	3	SR	15%	25%	21%	*39%	549
12	A	2.1	3	SR	*69%	3%	13%	15%	504
13	C	1.3	2	SR	5%	9%	*81%	5%	478
14	C	3.1	2	SR	4%	6%	*81%	7%	485
15	C	3.3	3	SR	8%	5%	*81%	5%	463
16	D	4.1	3	SR	9%	10%	14%	*65%	514
17	A	4.1	4	SR	*48%	8%	29%	13%	603
18	D	3.1	3	SR	30%	12%	5%	*52%	528
19		3.1	3	BCR	29%	31%	21%	16%	536

Objective/Subskill and Depth of Knowledge Level information follows this table.
SR: selected response; BCR: brief constructed response.

Performance Category Scale Score Range

Minimal Performance	Basic	Proficient	Advanced
433 and below	434–466	467–522	523 and above

Reading Objectives and Subskills

Types of Text

The grade 7 reading assessment presents a variety of reading passages representing literary, informational, and everyday text. Passages may be up to 1,500 words long and some passages may be paired with other, related passages. Students may be asked to read and answer questions about texts such as these:

Literary	Informational	Everyday
Short stories, novel excerpts, poetry, drama, biography, autobiography	Magazine, textbook, and newspaper articles, government documents, historical papers, reports, manuals, reviews, editorial cartoons	Charts, schedules, forms, timelines, applications, product use or warning labels, safety notices, simple instructions

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Objectives, Subskills, and Descriptors

Objectives (labeled 1, 2, 3, and 4) and subskills (labeled 1.1, 1.2, etc.) denote general knowledge and skills that are assessed and reported on the WKCE-CRT. Bulleted descriptors are *examples* of specific knowledge or skills that may be included within each subskill. The subskills include knowledge and skills *such as, but not limited to* the descriptors.

1. **Determine the meaning of words and phrases in context.**

    1.1. Use context clues to determine the meaning of words and phrases.

    - Use context clues to determine the meaning of unfamiliar words.
    - Understand the meaning of words and phrases used figuratively.
    - Use context clues to determine the meaning of multiple-meaning words.
    - Use knowledge of synonyms and antonyms to determine the meaning of words.
    - Identify analogies to demonstrate understanding of word meaning.
    - Understand connotative and denotative meaning of words.

    1.2. Use knowledge of word structure to determine the meaning of words and phrases.

    - Identify the meaning of a word with an affix.
    - Use knowledge of root words to determine the meaning of a word.

    1.3. Use word reference materials to determine the meaning of words and phrases.

    - Use an entry from a word reference to determine word meaning and pronunciation.

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2. Understand text.

2.1. Demonstrate understanding of literal meaning by identifying stated information in literary text.

- Identify stated information about story elements.

2.2. Demonstrate understanding of literal meaning by identifying stated information in informational text.

- Identify stated information about main ideas and supporting details.
- Identify stated information provided through text features.

2.3. Demonstrate understanding of explicitly stated sequence of events in literary and informational text.

- Identify first, next, and last events.
- Follow steps in a process.

3. Analyze text.

3.1. Analyze literary text.

- Make inferences about story elements.
- Summarize important ideas and events.
- Analyze stated or implied theme, message, or main idea.
- Draw conclusions.
- Identify purpose.
- Make inferences based on text features or visuals.
- Analyze diverse viewpoints.

3.2. Analyze informational text.

- Identify implied main ideas and supporting details.
- Identify implied relationships (such as cause/effect and compare/contrast).
- Summarize information.
- Identify purpose.
- Make inferences based on text features.
- Make inferences based on visual information.
- Make inferences about text structure.
- Analyze diverse viewpoints.
- Use graphic organizers to analyze and classify information.

3.3. Analyze author's use of language in literary and informational text.

- Analyze the use of literary devices.
- Recognize and distinguish among genres.
- Make inferences about the author's tone.
- Make inferences about the author's style.
- Analyze the author's use of rhetorical devices.
- Distinguish among types of language (such as formal/informal, literary/technical, and serious/humorous).

4. Evaluate and extend text.

4.1. Evaluate and extend literary text.

- Make connections to text.
- Make predictions.
- Identify and evaluate the author's purpose, point of view, and effectiveness.
- Evaluate diverse viewpoints and influences.
- Distinguish between important and unimportant details.
- Evaluate the credibility of story elements.
- Draw conclusions.

4.2. Evaluate and extend informational text.

- Make connections to text.
- Make predictions.
- Identify and evaluate the author's purpose, point of view, and effectiveness.
- Distinguish between facts and opinions.
- Evaluate the accuracy, currency, and credibility of information.
- Evaluate diverse viewpoints and influences.
- Distinguish between important and unimportant facts.
- Draw conclusions.

4.3. Evaluate and extend the author's use of language in literary and informational text.

- Evaluate the author's word choice and use of language.
- Recognize bias and propaganda in language.

Reading Depth of Knowledge

These depth of knowledge levels are intended to reflect the level of cognitive demand placed on students by test items. As the level of cognitive demand increases, so does the mental effort and integration of information required to answer a test item successfully. Each level represents important cognitive skills, and each level requires the use of cognitive skills in lower levels. For example, a student who is asked to make connections between two texts (level 4) would also need to recall pertinent details from the texts (level 1), understand stated information in the texts (level 2), and make inferences and draw conclusions about each text (level 3). The levels assume grade-appropriate text, vocabulary, and tasks. Test items should represent a range of depth of knowledge levels, and items within each level may represent a range of difficulty as indicated by percentage of students who answered the item correctly or scale score location.

Level 1: Recognizing and Recalling

Students demonstrate a grade-appropriate ability to recognize or recall basic facts, terms, or definitions. For example, a student might be asked to identify an explicitly stated main idea in a text.

Level 2: Using Fundamental Concepts and Procedures

Students demonstrate a grade-appropriate ability to use basic facts, definitions, skills, or concepts. For example, a student might be asked to use information in a text to complete a graphic organizer.

Level 3: Concluding and Explaining

Students demonstrate understanding of grade-appropriate text by using stated and implied information and text elements to draw conclusions. Students explain and convey ideas effectively. For example, a student might be asked to provide details and examples from a text to support a conclusion.

Level 4: Evaluating, Extending, and Making Connections

Students demonstrate their knowledge of concepts when evaluating or interpreting grade-level text. Students make connections among texts, common experiences, and issues. For example, a student might be asked to evaluate an author's effectiveness in achieving an intended purpose.

Reading Rubric for Constructed-Response Items

3 points

- The response demonstrates *thorough understanding* of the reading concept embodied in the task.
- The response is *accurate, complete, insightful, and fulfills all the requirements* of the task.
- Necessary support and/or examples are included.
- Information is clearly *text-based*.

2 points

- The response demonstrates *partial understanding* of the reading concept embodied in the task.
- The response is *accurate* and *fulfills most of the requirements* of the task.
- Necessary support and/or examples may not be complete or clearly text-based.

1 point

- The response demonstrates *an incomplete understanding* of the reading concept embodied in the task.
- The response provides *some information that is text-based*, but does not fulfill the requirements of the task.
- Information provided is *too general* or *too simplistic*.
- Necessary support and/or examples may be incomplete or omitted.

0 points

- The response demonstrates *no understanding* of the reading concept embodied in the task.
- The response is *inaccurate, confused*, or *irrelevant.*
- The student has *failed to respond to the task.*

Reading Constructed-Response Item Scoring Guide

Forms: Public Release	Item #: 19	Item Type: BCR	TB Page #: 11	AB Page #: n/a
Reporting Category: Reading				Max Score Pts: 3
Objective: 3. Analyzes Text				
Subskill: 3.2. Analyzes informational text				
Descriptor: Identifies/analyzes implied theme/message/main idea				

Item Stem

Explain one important way in which the characters in "Raggedy Pants and the Dinosaur Wall" and "The Pigeon and the Peacock" are similar. Be sure to thoroughly support your answer using details and examples from the passages. Write your answer on the lines below.

Responses should be evaluated according to the guidelines outlined below for each score point.

3 points
- The response demonstrates a **thorough understanding** of one important similarity between characters in the passage and the poem.
- The response **indicates an understanding** of how the identified similarity between characters is important.
- The student supports the response with **highly relevant ideas and details** from the passage and the poem. For example:
  - Characters in both the story and the poem try to "get back" at someone. While Maizell pretends that Libby's pants are torn, the speaker in the poem aims a hose at the brother, intending to soak him.
  - Characters in both the story and the poem are full of themselves (egotistical/self/important). While the brother in the poem admires himself in the reflection of the car, Libby buys the same shorts as Maizell, and yet acts as if she is better/more important than Maizell.

2 points
- The response demonstrates a **partial understanding** of the passage and the poem, and identifies a similarity between the two characters.
- The response makes **connections between relevant ideas** in the poem and the passage, but **does not indicate an understanding of the larger idea** of how the identified similarity between characters is important.
- The student supports the response with **accurate details** from the text. For example:
  - Characters in both the story and the poem do mean things to other people. Maizell is mean to Libby and the speaker in the poem is mean to the brother
  - The brother in the poem looks at himself in the reflection of his car, and Libby buys the same shorts as Maizell in the story.

1 point
- The response demonstrates an **incomplete understanding** of the reading passage and the poem and does not fulfill all the requirements of the task.
- The response comments on **relevant events** in the passage and the poem, but **fails to make connections** between characters in the two texts.
- The student provides **limited or vague text-based details**. For example:
  - Some of the characters were pretty mean.
  - One of the characters does something for himself and so does someone in the poem.

Anchor Papers for Reading
Constructed-Response Item

Explain one important way in which the characters in "Raggedy Pants and the Dinosaur Wall" and "The Pigeon and the Peacock" are similar. Be sure to thoroughly support your answer using details and examples from the passage and the poem. Write your answer on the lines below.

One person is thinking that the whole world revolves around them. They get caught up in themselves and get a big reality check in the end, like getting sprayed with the hose or being made believe that your shorts ripped.

Score Point 3
>Demonstrates a thorough understanding of one important similarity between characters in the passage and the poem. (whole world revolves around them/get a big reality check)
>Indicates an understanding of how the identified similarity between characters is important. (caught up in themselves)
>Supports the response with highly relevant ideas and details from the passage and poem. (getting sprayed with the hose/made to believe your shorts ripped)

Explain one important way in which the characters in "Raggedy Pants and the Dinosaur Wall" and "The Pigeon and the Peacock" are similar. Be sure to thoroughly support your answer using details and examples from the passage and the poem. Write your answer on the lines below.

Libby and the brother are similar. They are both very full of them selves: Libby brags about how much money she has and acts like she's better than everyone else, and the brother struts around practicing his faces and striking poses.

Score Point 3
>Demonstrates a thorough understanding of one important similarity between characters in the passage and the poem. (both very full of themselves)
>Indicates an understanding of how the identified similarity between characters is important.
>Supports the response with highly relevant ideas and details from the passage and poem. (brags about how much money she has/struts around striking poses)

Explain one important way in which the characters in "Raggedy Pants and the Dinosaur Wall" and "The Pigeon and the Peacock" are similar. Be sure to thoroughly support your answer using details and examples from the passage and the poem. Write your answer on the lines below.

The brother and libby are both acting all high and mighty. Then when the girl and the sister do some thing to them it brings them back down to earth.

Score Point 2
>Demonstrates a partial understanding of the passage and the poem, and identifies a similarity between two of the characters. (both are acting all high and mighty)
>Makes connections between relevant ideas in the poem and passage.
>Supports the response with accurate details/examples from the text. (the girl and sister both "bring them back down to earth" is a summary of details from the passage)

Explain one important way in which the characters in "Raggedy Pants and the Dinosaur Wall"
and "The Pigeon and the Peacock" are similar. Be sure to thoroughly support your answer
using details and examples from the passage and the poem. Write your answer on the
lines below.

I think the sister in the pigeon and the
Peacock and Maizell both dislike people that
think to much of themselves.

Score Point 1
   >Does not fulfill all of the requirements of the task. (does not support
     answer using details and examples from the passage and poem)
   >Comments on relevant events in the passage and poem, but fails
     to make connections between characters in the two texts.
   >Provides limited or vague text-based details. (lacks details)

Explain one important way in which the characters in "Raggedy Pants and the Dinosaur Wall" and "The Pigeon and the Peacock" are similar. Be sure to thoroughly support your answer using details and examples from the passage and the poem. Write your answer on the lines below.

thire all about friends and foes

Score Point 0
>Demonstrates no understanding of the reading concept embodied in the task.
>Response is inaccurate, confused, or irrelevant. (too general)

Mathematics

Sample Directions for Administering the Mathematics Test

Make sure each student has his or her own test book, a No. 2 pencil, an extra eraser, scratch paper, and the following manipulatives:

❑ Ruler

❑ Calculator for Session 2
(4-function calculator required; use of scientific calculator is student preference)

NOTE: *The use of a calculator is **not** allowed to solve the problems in Session 1.*

Also required for the operational test, but not for this released item book:

❑ Protractor

Students' test books should be closed.

SAY **Remember to use only a No. 2 pencil in this test. In Session 1, you will be answering multiple-choice questions and short answer questions. Multiple-choice questions are questions that ask you to choose the best answer. For the multiple-choice questions, you must fill in the circle completely and make your mark heavy and dark. If you want to change an answer, completely erase the mark you made before making a new mark. You must fill in only one circle for each multiple-choice question.**

You may use scratch paper to work the multiple-choice questions, but remember to fill in the circle that goes with the answer you choose.

Short-answer questions are questions that ask you to write your answer instead of filling in a circle. Each short-answer question has a Step A and a Step B. Write your answers within the boxed area only, on the lines and/or in the space provided. Be sure to answer the question completely to show you clearly understand the question. Do not write outside the boxed area. The boxed area is your answer space. Only what you write in the answer space will be scored. You do not need to use the entire answer space.

For the short-answer questions, if you are asked to complete or draw a chart or figure, please do not use shading in your answer. If you need to erase, make sure you erase completely.

Demonstrate by drawing the illustration below on the board.
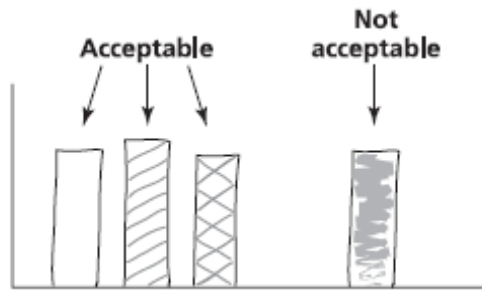
Now you will do Session 1 of the Mathematics test. Remember to read all of the directions and information in the test book. When you come to the word "STOP" at the bottom of the page, you have finished Session 1. You may go back and check your answers, but do not go on to Session 2 of the Mathematics test. When you have finished, sit quietly until everyone else has finished.

You will have 10 minutes to do Session 1. Make sure you stop at the end of Session 1.

Are there any questions?

When you are sure that all students understand the directions, continue.

SAY **Please open your test book to Page 2.**

Demonstrate. Check to be sure that all students are in the correct place in their test books.

SAY **You may begin.**

Record the starting and stopping times for Session 1.

Record the Starting Time:	Add10 Minutes:	Record the Stopping Time:
_____	**+ 10**	_____

Check to be sure that students are marking and writing their answers in the appropriate places in their test books.

At the stopping time,

SAY **Stop. Put down your pencil and close your test book. This is the end of Session 1.**

Pause to be sure that all students have closed their test books. Before proceeding to Session 2, make sure each student has a calculator. During an actual test administration, students would be required to clear their calculators' memories immediately before and after each calculator-allowed session.

SAY **Now, open your test book to the page labeled "Mathematics Session 2."**

In Session 2, you will be answering multiple-choice questions and short-answer questions. Multiple-choice questions are questions that ask you to choose the best answer. Remember, for the multiple-choice questions, you must fill in the circle completely and make your mark heavy and dark. If you want to change an answer, completely erase the mark you made before making a new mark. You must fill in only one circle for each multiple-choice question.

Short-answer questions are questions that ask you to write your answer instead of filling in a circle. Each short-answer question has a Step A and a Step B. Write your answers within the boxed area only, on the lines and/or in the space provided. Be sure to answer the question completely to show you clearly understand the question. Do not write outside the boxed area. The boxed area is your answer space. Only what you write in the answer space will be scored. You do not need to use the entire answer space.

Remember, for the short-answer questions, if you are asked to complete or draw a chart or figure, please do not use shading in your answer. If you need to erase, make sure you erase completely.

You will have 35 minutes to do Session 2. Remember to read all of the directions and information in this part of the test book. When you come to the word "STOP" at the bottom of the page, you have finished Session 2.

You may go back over Session 2 to check your answers, but do not go back to Session 1. When you have finished, sit quietly until everyone else has finished.

Are there any questions?

When you are sure that all students understand the directions, continue.

SAY **You may begin.**

Record the starting and stopping times for Session 2.

Record the Starting Time:	Add 35 Minutes:	Record the Stopping Time:
_____	+ 35	_____

SAY **Stop. This is the end of Session 2. Please close your test book.**

Collect all test materials. Use the information on the following pages to score the multiple-choice and constructed-response items.

Mathematics Item Information

Item	Answer Key	Calculator Allowed	Objective/ Subskill	Depth of Knowledge Level	2005–06 Item Statistics SR: Percent of Students who Chose A, B, C, or D (*Indicates Correct Response). BCR: Percent of Students who Received 0, 1, or 2 Points					Scale Score Location
					Format	A or 0	B or 1	C or 2	D	
1	C	No	Bb	2	SR	16%	19%	*53%	12%	555
2	B	No	Fa	2	SR	5%	*86%	5%	3%	476
3	A	No	Bb	2	SR	*32%	18%	35%	14%	571
4	D	No	Bb	1	SR	4%	9%	11%	*75%	500
5	A	No	Fa	2	SR	*73%	10%	4%	12%	518
6	D	Yes	Ba	1	SR	28%	17%	2%	*53%	542
7	C	Yes	Db	1	SR	16%	14%	*60%	9%	565
8	C	Yes	Fb	2	SR	5%	4%	*89%	2%	463
9	B	Yes	Cb	2	SR	9%	*65%	11%	14%	535
10	D	Yes	Cc	1	SR	3%	3%	4%	*88%	456
11		Yes	Eb	2	A-BCR	40%	57%			524
11		Yes	Ae	3	B-BCR	19%	19%	56%		504
12	B	Yes	Fc	2	SR	7%	*83%	8%	2%	492
13	C	Yes	Ea	2	SR	28%	26%	*37%	8%	588
14	B	Yes	Da	2	SR	14%	*69%	10%	7%	525
15	B	Yes	Dc	2	SR	9%	*67%	9%	15%	514
16	D	Yes	Ea	2	SR	6%	17%	6%	*70%	503
17	A	Yes	Dc	2	SR	*50%	15%	30%	4%	548
18		Yes	Ba	2	A-BCR	38%	60%			522
18		Yes	Ae	4	B-BCR	37%	35%	22%		552
19	C	Yes	Ea	2	SR	5%	6%	*86%	2%	479
20	A	Yes	Cc	1	SR	*80%	16%	2%	2%	484

Objective/Subskill and Depth of Knowledge Level information follows this table.
SR: selected response; A-BCR: brief constructed response, part A; B-BCR: brief constructed response, part B.

Performance Category Scale Score Range

Minimal Performance	Basic	Proficient	Advanced
479 and below	480–503	504–554	555 and above

Mathematics Objectives and Subskills

Beginning of Grade 7

How to use the Framework

The mathematics assessment framework is an indication of the knowledge and skills that will be assessed on the November WKCE-CRT. ***This information does not replace your local curriculum***. However, you may wish to ensure that your local curriculum includes the knowledge and skills described in the framework.

This section of the framework describes the types of content that students may encounter on the WKCE-CRT

The knowledge and skills to be assessed are organized into objectives, subskills, and descriptors as shown below. WKCE-CRT results will be reported by objectives and subskill.

> **A. Objective:** A group of cognitively related skills.
>> A.a. **Subskill:** A group of related knowledge and skills that *may include, but is not limited to,* the descriptors which follow.
>>> • **Descriptor:** an example of a specific knowledge or skill that may be assessed.

Objectives, Subskills, and Descriptors

Objective A:	Mathematical Processes
	Students will effectively use mathematical knowledge, skills, and strategies related to reasoning, communication, connections, representation, and problem solving.
	Descriptors, such as but not limited to
•	Use reasoning and logic to:
	▪ Perceive patterns
	▪ Identify relationships
	▪ Formulate questions
	▪ Pose problems
	▪ Make conjectures
	▪ Justify strategies
	▪ Test reasonableness of results
•	Communicate mathematical ideas and logical reasoning using the vocabulary of mathematics in a variety of ways (e.g., using words, numbers, symbols, pictures, charts, tables, diagrams, graphs, and models).
•	Connect mathematics to the real world, as well as within mathematics.
•	Create and use representations to organize, record, and communicate mathematical ideas.
•	Solve and analyze routine and non-routine problems.

Objective B:	Number Operations and Relationships
Sub-skill B.a.:	**Concepts**
	Descriptors, such as but not limited to

- Recognize and apply place-value concepts to numbers less than 10,000,000 with decimals to the thousandths place.
- Read, write, and represent numbers using words, numerals, number lines, arrays, and expanded form (12.09=10+2+.09) and symbolic renaming (12.09= 13-.91).
- Compare and order a set of fractions or decimals (to the hundredths place) and use symbols ($<$, $>$, $=$, $\neq$, $\leq$, $\geq$).
- Identify and use number theory concepts:
  - prime and composite numbers
  - divisibility potential of numbers (divisors of 1-10, 25, and multiples of 10).
  - least common multiples
  - greatest common factor of two numbers
- Demonstrate understanding of fractions and benchmark percents in problems with context. (e.g., Joe got six questions correct and two were wrong, what percent did he get correct?).
- Apply proportional reasoning to a variety of problem situations (e.g., comparisons and/or rates).
- Identify equivalent forms of fractions, decimals and percents.

Sub-skill B.b.:	**Computation**

- - Use all operations in everyday situations (including monetary contexts) to solve single or multi-step word problems.
  - Solve problems involving percents with and without context.
  - Add and subtract decimals including thousandths with and without context.
  - Multiply decimals including hundredths with and without context.
  - Divide decimals including hundredths by single-digit divisors in problems with and without context.
- Demonstrate understanding of the concept of division of fractions in a contextual setting.
- Add, subtract, and multiply mixed numbers and fractions with like and unlike denominators.
- Estimate the sum, difference, and product of whole numbers, common fractions, mixed numbers, and decimals to thousandths and estimate benchmark fractions.
- Determine reasonableness of answers.

Objective C:	**Geometry**
Sub-skill C.a.:	**Describing figures**

Descriptors, such as but not limited to
- Name regular and irregular polygons up to eight sides and identify and justify by characteristics whether a shape is a polygon.
- Determine the number of faces, edges, and vertices given an illustration of a 3-dimensional figure.
- Classify shapes according to characteristics such as parallel and perpendicular lines; identify right, acute, and obtuse angles with varied orientations.
- Find the measure of the third angle of a triangle when given the measures of two interior angles.
- Decompose convex polygons into triangles using diagonals from a single vertex.

Sub-skill C.b.:	**Spatial relationships and transformations**

Descriptors, such as but not limited to
- Draw and/or describe a similar figure when given a polygon drawn on graph paper with vertices at lattice points.

- Identify figures that are congruent and/or similar.
- Demonstrate understanding of similarity by finding the relationship between the sides of two figures.
- Draw or identify the image of a figure based on one or more transformations (reflection, rotation and/or translation).
- Design symmetrical shapes.
  Draw or identify lines of symmetry.
- Identify and describe 3-dimensional figures from multiple perspectives.

Sub-skill C.c.:	**Coordinate systems**

Descriptors, such as but not limited to
- Identify, locate, plot coordinates in the four quadrants and transformations of points across the x- or y-axis.
- Locate or plot coordinates in the four quadrants using a geometric figure (e.g., transformations).

Objective D:	**Measurement**
Sub-skill D.a.:	**Measurable attributes**

Descriptors, such as but not limited to
- Select the appropriate unit of measure to estimate the length, liquid capacity, volume, and weight/mass of everyday objects using U.S. customary and metric.
- Convert units within a system (e.g., feet to yards; ounces to pounds; inches to feet; pints to quarts).
  Approximate conversions of units between metric and U.S. customary systems using a model or in context (quart/liter; yard/meter).

Sub-skill D.b.:	**Direct measurement**

Descriptors, such as but not limited to
- Apply appropriate tools and techniques to measure down to the nearest 1/4-, 1/8- or 1/16-inch or nearest centimeter or millimeter.
- Determine and compare elapsed time in problem-solving situations.
- Measure and/or draw angles up to 180 degrees.

Sub-skill D.c.:	**Indirect measurement**

Descriptors, such as but not limited to
- Estimate area given a reference.
- Determine perimeter/circumference and area of squares, rectangles, triangles, parallelograms and circles in real-world context.
- Determine the distance between points using a scale.

Objective E:	**Statistics and Probability**
Sub-skill E.a.:	**Data analysis and statistics**

Descriptors, such as but not limited to
- Summarize data sets in tables, charts, and diagrams with and or without context.
- Evaluate a set of data to generate or confirm/deny hypotheses.
- Extract, interpret, and analyze data from tables, simple stem-and-leaf plots, simple bar graphs, line plots, line graphs, simple circle graphs, charts, and diagrams.

- Create graph with one-variable data sets using simple stem-and-leaf plots, bar graphs, circle graphs, line plots, and line graphs; discuss appropriateness of graphs selected.
- Find mean, median (with odd set of data), mode, and range of a set of data with and without context.
- Evaluate sources of data in context and multiple representations of a given data set.

Sub-skill E.b.:	**Probability**

Descriptors, such as but not limited to
- Determine the likelihood of an event and probability based on one independent event (e.g., spinning the arrow on a spinner).
- Use probabilities to estimate outcomes and evaluate fair and unfair simple events.
- Use data from simulations provided in charts/tables to solve and interpret probability problems.
- Describe and determine the number of combinations of selecting 3 items from 4 or more items.
- Solve problems involving sample spaces or diagrams.
- Analyze outcomes based on an understanding of theoretical and experimental probability.

Objective F:	**Algebraic Relationships**
Sub-skill F.a.:	**Patterns, relations and functions**

Descriptors, such as but not limited to
- Use two concurrent numeric patterns to describe and analyze functional relationships between two variables in two concurrent numeric patterns using addition and subtraction.
- Extend a given arithmetic sequence of pictures or numbers.
- Describe and interpret linear patterns in tables and graphs.
- Identify the rule to complete or extend a function table or any combination of the two using one operation (+, -, x, ÷) and numbers (0 through 100) in the function table.
- Describe real-world phenomena represented by a graph. Describe real-world phenomena that a given graph might represent.

Sub-skill F.b.:	**Expressions, equations and inequalities**

Descriptors, such as but not limited to
- Demonstrate understanding of equality and inequality and solve single-variable equations using symbols ($<$, $>$, $=+$).
- Solve single-variable, one-step equations and algebraic expressions with one variable and one operation and whole number coefficients with and without context.
- Describe in words the generalization for a given one-operation pattern.
- Solve two-step, multi-operation equations with letter variables and whole number coefficients with and without context (e.g., $3x + 1 = 7$)
- Represent problem situations with one- or two-step equations or expressions.
- Describe in words the generalization for a given one-operation pattern.
- Evaluate formulas with and without context by solving for a specified variable.

Sub-skill F.c.:	**Properties**

Descriptors, such as but not limited to

- Identify a pair of equivalent numerical expressions where the commutative property of either addition or multiplication has been used.
- Demonstrate understanding of up to three-step order of operations expression with and without context using parentheses and exponents.
- Demonstrate understanding of distributive property.

Mathematics Depth of Knowledge

The representative examples for the following depth of knowledge categories are intended to reflect student performance expectations with regard to the level of mental effort and amount of information integrated by the student. Items are targeted at one of four levels of cognitive demand. Each level of demand is represented by items with a range of difficulty, as indicated by the percentage of students who answered the item correctly or by scale score value. Assuming grade-appropriate vocabulary and test items, these levels are viable and useful across all grades.

Level 1: Recognizing and Recalling

Students recognize and recall basic facts, terms, concepts, and definitions of the content and processes of mathematics. For example, students may be required to do computation with whole numbers, fractions, decimals, and integers.

Level 2: Using Fundamental Concepts and Procedures

Students describe or apply basic facts, terms, rules, concepts and definitions of the content and processes of mathematics.

Level 3: Concluding and Explaining

Students demonstrate an understanding of complex ideas, draw conclusions based on this understanding, and communicate ideas and conclusions effectively.

Level 4: Evaluating, Extending, and Making Connections

Students synthesize skills and techniques from various concepts of mathematics to solve multifaceted problems, and justify conclusions using mathematical definitions, properties, and principles. For example, students may be required to support mathematical arguments with definitions, properties, and principles.

Mathematics Rubric for Constructed-Response Items

Step B of the constructed-response items is scored using a generic rubric.

2 points   The student demonstrates a thorough understanding of the mathematical concepts and/or procedures represented in the problem. The student uses appropriate mathematical procedures and/or concepts to explain or justify the response to Step A, and provides clear and complete explanations and interpretations containing words, calculations, or symbols, unless otherwise specified in the item stem.

The response may contain minor flaws that do <u>not</u> detract from the demonstration of a thorough understanding of the problem.

1 point   The student demonstrates only a partial understanding of the mathematical concepts and/or procedures represented in the problem. The response lacks an essential understanding of the underlying mathematical concepts used to provide the response to Step A.

The response contains errors related to the misinterpretation of important aspects of the problem, misuse of mathematical procedures and/or concepts, or misinterpretation of results.

0 points   The student provides a completely incorrect explanation or justification, or one that cannot be interpreted, or no response at all.

Mathematics Constructed-Response Item
Scoring Guides

Form: Public Release	Item #: 11	Item Type: BCR	TB Page #: 8	AB Page #: n/a
Objective for Step A: E. Statistics and Probability				Max Score Pts:
Subskill: E.b. Probability				Step A: 0–1
Objective for Step B: A. Mathematical Processes				Step B: 0–2

Sample correct response

Step A

$$\frac{2}{11}$$

Step B

I counted the letters in Mathematics and got 11. Then I counted the T's and got

2. So the chances of picking a T are $\frac{2}{11}$.

Step A: Response is limited to correct answer or range below

Any of the following:
- 2:11
- $\frac{2}{11}$
- 2 out of 11
- 0.18
- 18%

Step B: Responses <u>may</u> include, but may <u>not be limited to</u>, the Answer Cues below

2 points   <u>Both</u> of the following tasks are accomplished:

- The student indicates a total of 11 letters in the word MATHEMATICS.

- The student indicates that the word contains 2 letter T's.

1 point   <u>One</u> of the following applies:

- The student accomplishes only one of the above tasks.

- The student accomplishes both of the above tasks, but with a computational error. [See Note.]

- The response might show an understanding of outcomes, but not the correct way in which desired outcomes relate to possible outcomes, i.e. calling the result 11 out of 2 in the explanation.

0 points   The student provides a completely incorrect explanation or justification, or one that cannot be interpreted.

Note: If an arithmetic error leads to loss of credit for Step A, and the process is otherwise correct, award full credit for Step B.

Step A: Response is limited to correct answer or range below

$3\dfrac{3}{4}$

Step B: Responses **may** include, but may **not be limited to**, the Answer Cues below

2 points   <u>Both</u> of the following tasks are accomplished:

- The student creates a word problem stating a new number of cookies needed (must not be 150 nor 50), and asking for the number of cups of sugar that will be used.

- The student shows a mathematically correct solution to the problem, using ratios or proportions with the fraction ¾.

1 point   <u>One</u> of the following applies:

- The student accomplishes only the first of the above tasks.

- The student accomplishes both of the above tasks, but with a computational error. [See Note.]

- The student accomplishes both of the above tasks, but uses 50 or 150 cookies, contrary to instructions.

- The student correctly calculates the number of cups of a different ingredient.

- The student gives and uses a different recipe, but calculates the number of cups of sugar correctly, according to the different recipe.

0 points   The student provides a completely incorrect explanation or justification, or one that cannot be interpreted.

Note: If an arithmetic error leads to loss of credit for Step A, and the process is otherwise correct, award full credit for Step B. The errors include (a) incorrectly calculated ratio of "recipe cookies" to "cookies needed", (b) incorrect multiplication of the fraction ¾.

Anchor Papers for Mathematics
Constructed-Response Items

Item 11

Joan writes each letter of the word MATHEMATICS on separate pieces of paper. She puts the pieces of paper in a jar and asks a friend to pick one without looking.

Step A

What is the probability that Joan's friend will pick a paper with the letter "T"?

Answer: _18%_

Step B

Use what you know about probability to explain why your answer is correct. Use words, numbers, and/or symbols in your explanation.

I put the two 'T's over 11 which was the total number of letters. I divided 2 by 11 and got .18. I multiplied .18 by 100 to get 18%.

Step A
   Score Point 1
   > 18% is an acceptable response
Step B
   Score Point 2
   > Student indicates 11 letters total
   > Student indicates that 2 letters are T's

Item 11

Joan writes each letter of the word MATHEMATICS on separate pieces of paper. She puts the pieces of paper in a jar and asks a friend to pick one without looking.

Step A

What is the probability that Joan's friend will pick a paper with the letter "T"?

Answer: _____18 %_____

Step B

Use what you know about probability to explain why your answer is correct. Use words, numbers, and/or symbols in your explanation.

Because t is used twice in the word.

_____

_____

_____

_____

Step A
  Score Point 1
Step B
  Score Point 1
  > [student does not indicate 11 letters total]
  > Student indicates that 2 letters are T's

Item 11

Joan writes each letter of the word MATHEMATICS on separate pieces of paper. She puts the pieces of paper in a jar and asks a friend to pick one without looking.

Step A

What is the probability that Joan's friend will pick a paper with the letter "T"?

Answer: 2:11

Step B

Use what you know about probability to explain why your answer is correct. Use words, numbers, and/or symbols in your explanation.

Because it's a ration.

Step A
   Score Point 1
   > 2:11 is an acceptable response
Step B
   Score Point 0
   > [student does not indicate 11 letters total]
   > [student does not indicate that 2 letters are T's]

Item 11

Joan writes each letter of the word MATHEMATICS on separate pieces of paper. She puts the pieces of paper in a jar and asks a friend to pick one without looking.

Step A

What is the probability that Joan's friend will pick a paper with the letter "T"?

Answer: _____ 11:2 _____

Step B

Use what you know about probability to explain why your answer is correct. Use words, numbers, and/or symbols in your explanation.

There are eleven letters in Mathematics and 2 T's.

Step A
  Score Point 0
  > [11:2 is an incorrect response]
Step B
  Score Point 2
  > Student indicates 11 letters total
  > Student indicates that 2 are T's

Item 11

Joan writes each letter of the word MATHEMATICS on separate pieces of paper. She puts the pieces of paper in a jar and asks a friend to pick one without looking.

Step A

What is the probability that Joan's friend will pick a paper with the letter "T"?

Answer: $\frac{2}{11}$

Step B

Use what you know about probability to explain why your answer is correct. Use words, numbers, and/or symbols in your explanation.

Since there are 11 letters in MATHEMATICS, when you choose it at random, the probability is $\frac{2}{11}$.

Step A
   Score Point 0
Step B
   Score Point 1
   > Student indicates 11 letters total
   > [student does not indicates that 2 are T's]

Item 11

Joan writes each letter of the word MATHEMATICS on separate pieces of paper. She puts the pieces of paper in a jar and asks a friend to pick one without looking.

Step A

What is the probability that Joan's friend will pick a paper with the letter "T"?

Answer: _____ 50% _____

Step B

Use what you know about probability to explain why your answer is correct. Use words, numbers, and/or symbols in your explanation.

_____ It would be _____
_____ half. _____

Step A
   Score Point 0
Step B
   Score Point 0
   > [student does not indicate 11 letters total]
   > [student does not indicate that 2 are T's]

Item 18

Dan and Jen are making chocolate chip cookies for a bake sale. The chocolate chip cookie recipe is shown below.

Chocolate Chip Cookies

1/2 cup butter
1 egg
3/4 cup sugar
1 1/4 cups flour
1/2 teaspoon salt
1/2 teaspoon vanilla
1/2 cup chocolate chips

This recipe makes 50 cookies.

Step A

Dan and Jen need to make 150 cookies for the bake sale. How many cups of flour will they need in order to make 150 cookies?

Answer: _____ 3 3/4 _____ cups of flour

Step B

Using the same recipe and what you know about fractions and whole numbers, write a similar word problem. The number of cookies needed must not be 50 or 150. Your word problem should ask for the number of cups of sugar that should be used. Solve your problem and show all your work.

Bob and Sue are making cookies for a rumage sale.
How many cups of sugar will they need to make 250 cookies
3/4 x 5 = 3 3/4 cups sugar

Step A
  Score Point 1
Step B
  Score Point 2
  > Question is correctly framed
  > Ratio of recipe to required number of cookies is correct;
    solution is correct

Item 18

Dan and Jen are making chocolate chip cookies for a bake sale. The chocolate chip cookie recipe is shown below.

Chocolate Chip Cookies

1/2 cup butter
1 egg
3/4 cup sugar
1 1/4 cups flour
1/2 teaspoon salt
1/2 teaspoon vanilla
1/2 cup chocolate chips

This recipe makes 50 cookies.

Step A

Dan and Jen need to make 150 cookies for the bake sale. How many cups of flour will they need in order to make 150 cookies?

Answer: _____ 3 3/4 _____ cups of flour

Step B

Using the same recipe and what you know about fractions and whole numbers, write a similar word problem. The number of cookies needed must not be 50 or 150. Your word problem should ask for the number of cups of sugar that should be used. Solve your problem and show all your work.

Dan and Jen need to make 200 cookies for the bake sale. How many cups of sugar will they need? $\frac{3}{4} \cdot 5 = \frac{3}{4} \cdot \frac{5}{4} = \frac{18}{4} = 3\frac{3}{4}$

Step A
  Score Point 1
Step B
  Score Point 1
  > The question posed is correct
  > [the multiplier of recipe quantities should have been 4 instead of 5]

Item 18

Dan and Jen are making chocolate chip cookies for a bake sale. The chocolate chip cookie recipe is shown below.

> **Chocolate Chip Cookies**
>
> 1/2 cup butter
> 1 egg
> 3/4 cup sugar
> 1 1/4 cups flour
> 1/2 teaspoon salt
> 1/2 teaspoon vanilla
> 1/2 cup chocolate chips
>
> This recipe makes 50 cookies.

Step A

Dan and Jen need to make 150 cookies for the bake sale. How many cups of flour will they need in order to make 150 cookies?

Answer: _____ 3 3/4 _____ cups of flour

Step B

Using the same recipe and what you know about fractions and whole numbers, write a similar word problem. The number of cookies needed must not be 50 or 150. Your word problem should ask for the number of cups of sugar that should be used. Solve your problem and show all your work.

Dan & Jen are making cookies for a shelter they need 150 cookies but the recipe only makes 50 cookies with 3/4 cups of sugar, how many cups do they need? 50+50+50=150 then add 3/4+3/4+3/4=9/4=2 1/4 cups of sugar

Step A
  Score Point 1
Step B
  Score Point 1
  > The method is correct
  > [instructions clearly state not to use 150 cookies]

Item 18

Dan and Jen are making chocolate chip cookies for a bake sale. The chocolate chip cookie recipe is shown below.

Chocolate Chip Cookies

1/2 cup butter
1 egg
3/4 cup sugar
1 1/4 cups flour
1/2 teaspoon salt
1/2 teaspoon vanilla
1/2 cup chocolate chips

This recipe makes 50 cookies.

Step A

Dan and Jen need to make 150 cookies for the bake sale. How many cups of flour will they need in order to make 150 cookies?

Answer: __3 ³/4__ cups of flour

Step B

Using the same recipe and what you know about fractions and whole numbers, write a similar word problem. The number of cookies needed must not be 50 or 150. Your word problem should ask for the number of cups of sugar that should be used. Solve your problem and show all your work.

25 cookies for the bake sale. How many cups of flour will they need in order to make 25 cookies. 5 cups of flour. 5 cups = 6 cookies.

Step A
  Score Point 1
Step B
  Score Point 0
  > [uses flour instead of sugar and
    shows no understanding of ratios]

Item 18

Dan and Jen are making chocolate chip cookies for a bake sale. The chocolate chip cookie recipe is shown below.

Chocolate Chip Cookies

1/2 cup butter
1 egg
3/4 cup sugar
1 1/4 cups flour
1/2 teaspoon salt
1/2 teaspoon vanilla
1/2 cup chocolate chips

This recipe makes 50 cookies.

Step A

Dan and Jen need to make 150 cookies for the bake sale. How many cups of flour will they need in order to make 150 cookies?

Answer: _____ $3\frac{1}{2}$ _____ cups of flour

Step B

Using the same recipe and what you know about fractions and whole numbers, write a similar word problem. The number of cookies needed must not be 50 or 150. Your word problem should ask for the number of cups of sugar that should be used. Solve your problem and show all your work.

Dan needs to make 100 cookies for school treat how many cups of sugar does he need? $\frac{3}{4} + \frac{3}{4} = \frac{6}{4} = 1\frac{2}{8}$

Step A
  Score Point 0
Step B
  Score Point 2
  > Question is correctly formed
  > Ratio of cookies to recipe is correct;
    solution is correct

Item 18

Dan and Jen are making chocolate chip cookies for a bake sale. The chocolate chip cookie recipe is shown below.

Chocolate Chip Cookies

1/2 cup butter
1 egg
3/4 cup sugar
1 1/4 cups flour
1/2 teaspoon salt
1/2 teaspoon vanilla
1/2 cup chocolate chips

This recipe makes 50 cookies.

Step A

Dan and Jen need to make 150 cookies for the bake sale. How many cups of flour will they need in order to make 150 cookies?

Answer: _____187.5_____ cups of flour

Step B

Using the same recipe and what you know about fractions and whole numbers, write a similar word problem. The number of cookies needed must not be 50 or 150. Your word problem should ask for the number of cups of sugar that should be used. Solve your problem and show all your work.

How many cups of sugar do you need to make 4 cookies for the kids?
3/4 + 3/4 + 3/4 + 3/4 = 3 cups of sugar

Part A
  Score Point 0
Part B
  Score Point 1
  > Correct method
  > [the student misrepresented the number of cookies]

Item 18

Dan and Jen are making chocolate chip cookies for a bake sale. The chocolate chip cookie recipe is shown below.

Chocolate Chip Cookies

1/2 cup butter
1 egg
3/4 cup sugar
1 1/4 cups flour
1/2 teaspoon salt
1/2 teaspoon vanilla
1/2 cup chocolate chips

This recipe makes 50 cookies.

Step A

Dan and Jen need to make 150 cookies for the bake sale. How many cups of flour will they need in order to make 150 cookies?

Answer: _____ 3 1/4 _____ cups of flour

Step B

Using the same recipe and what you know about fractions and whole numbers, write a similar word problem. The number of cookies needed must not be 50 or 150. Your word problem should ask for the number of cups of sugar that should be used. Solve your problem and show all your work.

I just looked at the chart and and looked at the number is 1 1/4 so I multiply it by 3 so 3×50 is 150 and then I multiply is 3×1 1/4.

Step A
  Score Point 0
Step B
  Score Point 0
  > [only explains how the answer to Step A was reached]

Guide to Grade 7 Released Item Books
In READING and MATHEMATICS

Wisconsin Department of Public Instruction
Elizabeth Burmaster, State Superintendent